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Stefano Tubaro

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EXAMINER

MEROUAN, ABDERRAHIM

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/571,010	Applicant(s) TUBARO ET AL.	
	Examiner ABDERRAHIM MEROUAN	Art Unit 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the applicant discloses: "...computer-readable medium..." in claims 24,27,30,33,35, and 36, however the specifications don't disclose: computer-readable medium.
2. The examiner interprets the computer-readable medium as physical storage such as a memory.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.
4. Claims 21-36 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Based on Supreme Court precedent and recent Federal Circuit decisions, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. The instant claims neither transform underlying

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subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 21-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Bittner et Al (Exact Regional Visibility using Line) hereinafter referred as Bittner.

7. As per claim 21, Bittner discloses: A method for determining a region of visibility between at least a first reflector and a second reflector, the method comprising: representing the first reflector(Bittner , page 8, Figure 9 (a)), the second reflector and a third reflector in a system of coordinates (x, y, z)); (Bittner , page 4, Lines passing through a point, line 5); carrying out an affine transformation of the system of coordinates (x, y, z) (Bittner , page 3, Plucker coordinates of lines, lines 1 to 15); determining a region of visibility of the second reflector in relation to the first reflector as a set of parameters of straight lines that link a generic point of the first reflector with a generic point of the second reflector (Bittner, page 6, Lines passing through a set of line segments, Figure 6 (a) and (b)); determining a region of

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visibility of the second and third reflectors as seen from the first reflector (Bittner, page 8, Fast regional visibility test, lines 1-6, Figure 10 (a), and (b)); tracing a single semi-straight line in the system of coordinates whose parameters are comprised in overlapping regions of visibility starting from the first reflector (Bittner, page 7, Visibility from a region, lines 1- 5, Figure 8 (a) , (b), and (c)); determining a succession order of intersections between the second and third reflectors based on the single semi-straight line (Bittner, page 5, Figure 4 (a), and (b)); and assigning a portion of the overlapping regions of visibility to the reflector having priority in the succession order (Bittner, page 5, Lines passing through a set of line segments, right column, lines 15-21), wherein the regions of visibility represent a visibility diagram (Bittner, page 8, Figure 9 (a), and (b)).

8. As per claim 22, Bittner discloses: The method, wherein said carrying out of the affine transformation comprises the execution of a rotatory-translation of the system of coordinates (x, y, z) so that the first reflector is placed on a plane $x = 0$. (Bittner, page 4, Plucker coordinates of lines, Figure 2 (a) , (b), and (c))

9. As per claim 23, Bittner discloses: A method for determining a beam tree of beams of rays on a plurality of reflectors, comprising (Bittner, page 6, Figure 7 (a), and (b)):
determining the regions of visibility according to the method of claim 22 so as to determine the visibility diagram (Bittner, page 6, Figure 6 (a), and (b));
positioning a source in a system of coordinates (x, y) (Bittner, page 5, Lines passing through a set of line segments, lines 1-4);
determining in the system of coordinates (x, y) areas of the reflectors illuminated by the

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source (Bittner, page 6, , Figure 6 (a), and (b));

memorizing coordinates of the areas of the reflectors illuminated by the source (Bittner, page 8, Figure 8 (c));

representing a virtual source for each reflector illuminated (Bittner, page 9, Figure 10(a) and (b));

applying the affine transformation of the system of coordinates (x, y) to the virtual source and to an illuminated region (Bittner, page 8, Figure 9 (a) and (b));

representing the transformed illuminated region by a segment of extremes (0, b₀) and (0, b_l);

representing the transformed virtual source in a space of parameters (a, b) by an equation $y = a x + b$, and the illuminated region by a disequation $b_0 \leq b \leq b_l$, wherein the equations $y = a x + b$

and $b_0 \leq b \leq b_l$ represents a segment of illumination in the space of the parameters (a, b); and

intersecting the segment of illumination with the visibility diagram so as to obtain sub- segments

and thus sub-intervals of the interval $b_0 \leq b \leq b_l$, wherein the sub-intervals represent portions

of the illuminated region that are to each illuminate a new reflector (Bittner, page 9, Figure 10

(a) and (b)) .

10. As per claims 26, 29, 32, and 34, the arguments used to reject claim 23 are the same arguments used to reject claims 26, 29, 32, and 34.

11. As per claim 24, Bittner discloses: A program to be executed by a computer, the program being recorded on a computer-readable medium, the program comprising:

a program code for carrying out the method according to claim 22 (Bittner, page 10, right

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column , lines 11-13).

12. As per claim 25, Bittner discloses: The method, wherein said carrying out of the affine transformation comprises the execution of a scaling down of the system of coordinates (x, y, z) so that the first reflector assumes a preset dimension (Bittner, page 10, Results, lines 24- 42, Figure 12-(b)).

13. As per claim 31, Bittner discloses: The method, further comprising: determining a beam tree of beams of rays on the reflectors based on the determined regions of visibility (Bittner, page 6, Figure 7 (a), and (b)).

14. As per claims 27, 30, 33, 35, and 36, the arguments used to reject claim 24 are the same arguments used to reject claims 27, 30, 33, 35, and 36.

15. As per claim 28, Bittner discloses: The method, further comprising:
representing the first reflector and second reflector in a system of coordinates (x, y) by segments (Bittner, page 8, Figure 9 (a));
executing an affine transformation of the system of coordinates (x, y) capable of leading the first reflector to assume coordinates of extremes at points $(0, m)$ and $(0, n)$ with $m < n$ (Bittner, page 3, Plucker coordinate of lines, lines 17-22 “The coordinate of ...”);
representing the second reflector by a system of equations in which $x=et+f$, $y=gt+h$ with $0 \leq t \leq 1$; representing a generic straight line by parameters (a, b) of an equation $y = a x + b$ (Bittner,

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page 3, Plucker coordinate of lines, line 19 “The coordinate of ...”); determining a region of visibility determining all the straight lines that pass through a generic point of the first reflector and a generic point of the second reflector combining the system equations so as to obtain a system in which : $gt + h = a(et + f) + b$, with $0 \leq t \leq 1$ and with $m \leq b \leq n$ (Bittner, page 9, Figure 10 (a) and (b))

Response to Arguments

16. Applicant's arguments with respect to claims 1 -36 have been considered but are moot.

17. Applicant's arguments directed to claims 1-36 have been fully considered but they are not persuasive.

18. In response to applicants argument for claim 21, applicant argues that the prior art doesn't disclose:” tracing a single semi-straight line in the system of coordinates whose parameters are comprised in overlapping regions of visibility starting from the first reflector, and determining a succession order of intersections between the second and third reflectors based on the single semi-straight line...”, This argument is not persuasive because Bittner stated that: The visibility test proceeds as follows: given a source region and a polygonal region R_x we find supporting and separating lines of the source region R_s and R_x (see Figure 9). Then we construct a blocker polygon $B(R_s, R_x)$ using mapping of the supporting and separating lines as its vertices.

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This blocker polygon generally represents a superset of lines intersecting R_s and R_x (see Figure 10). $B(R_s, R_x)$ is filtered down the ROT as described in Section 5.3. Reaching an *out-leaf* we can conclude that at least part of R_x is visible and terminate the algorithm. If the filtering procedure reaches an n -leaf L we determine the relative position of OL and R_x . Denote an open halfspace defined by OL that contains the source H^+ and the opposite halfspace H^- . Visibility of R_x in L is classified as follows: 1. R_x is visible, if R_x lies completely in H^+ ; 2. R_x is invisible, if R_x lies completely in H^- ; 3. R_x is partially visible, if R_x intersects both H^+ and H^- .”(see Bittner, Page 8, Fast regional visibility test, left and right column).

Conclusion

19. Applicants amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABDERRAHIM MEROUAN whose telephone number is (571)270-5254. The examiner can normally be reached on Monday to Friday 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wu can be reached on (571) 272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Abderrahim Merouan/

Examiner, Art Unit 2628

/XIAO M. WU/

Supervisory Patent Examiner, Art Unit 2628

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